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(56) Documents cited

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| GB A 2082544 | GB 1296001 |
| GB A 2050299 | GB 1276709 |
| GB 1573694 | GB 1179671 |
| GB 1335259 | GB 0966256 |

(58) Field of search

B8M
B5D

(54) Carton construction and method of manufacture

(57) A container 10 for holding a roll of web material has a serration edge 28 formed on a plastic strip 26. There is also described a method of applying the strip in which the strip and a carton blank are fed lengthwise, glue is located therebetween, and the blank and strip are pressed together to affix the strip to the blank.

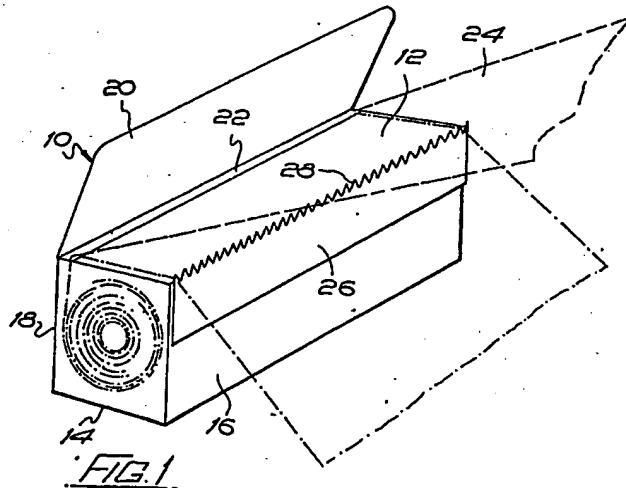


FIG. 1

The drawings originally filed were informal and the print here reproduced is taken from later filed formal copies.

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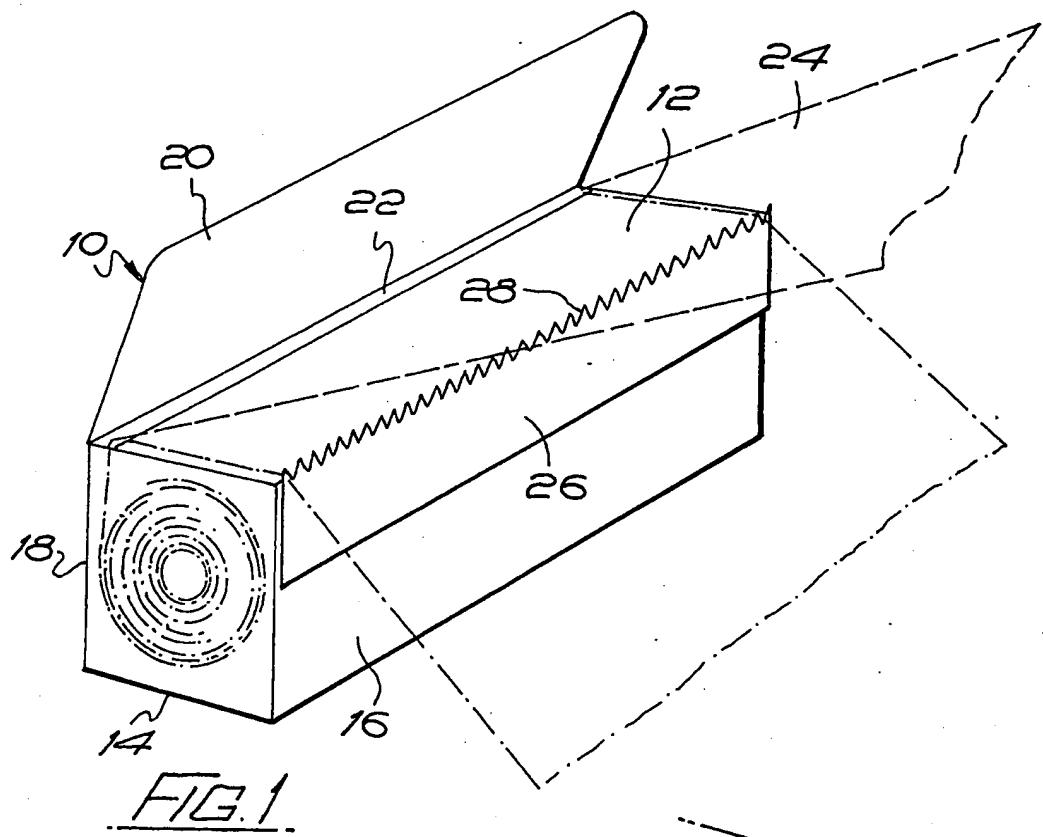


FIG. 1

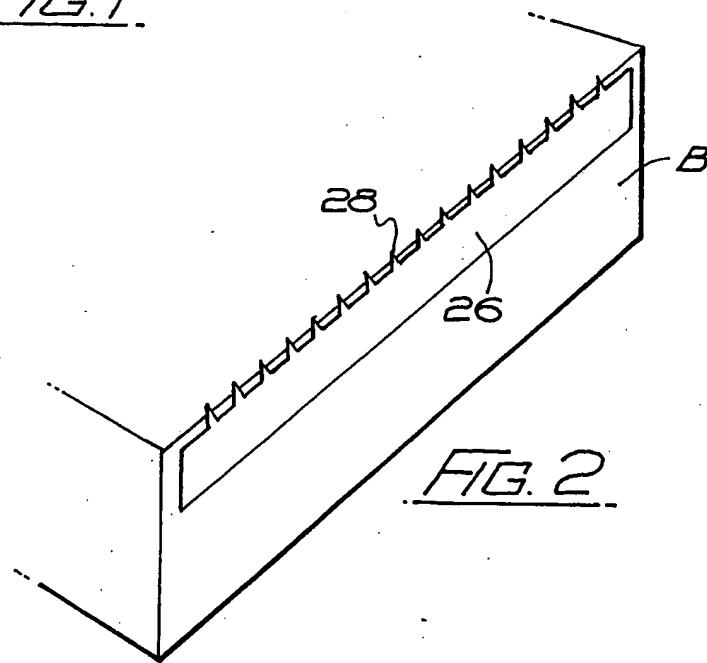


FIG. 2

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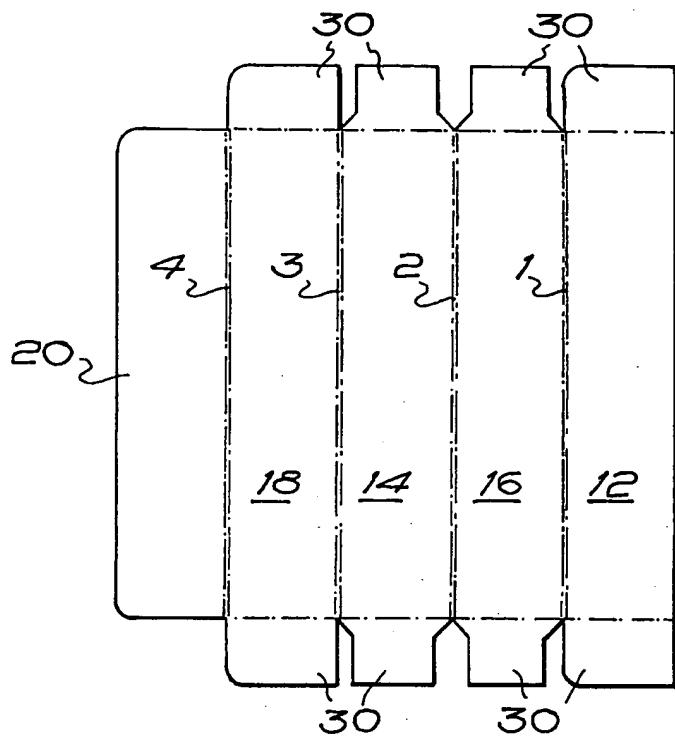


FIG. 3

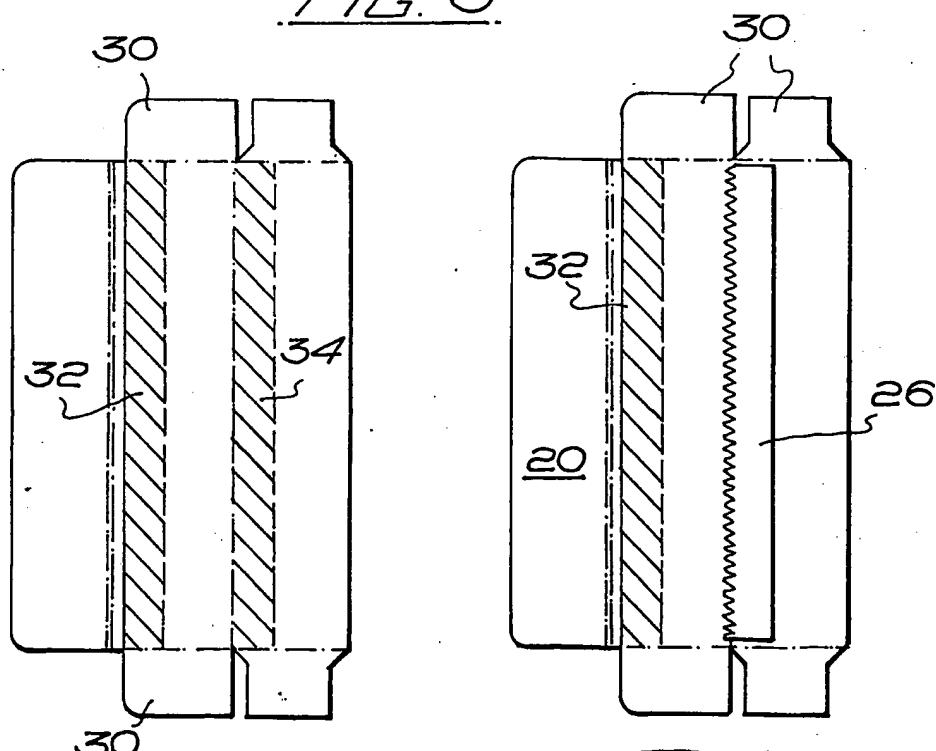


FIG. 4

FIG. 5

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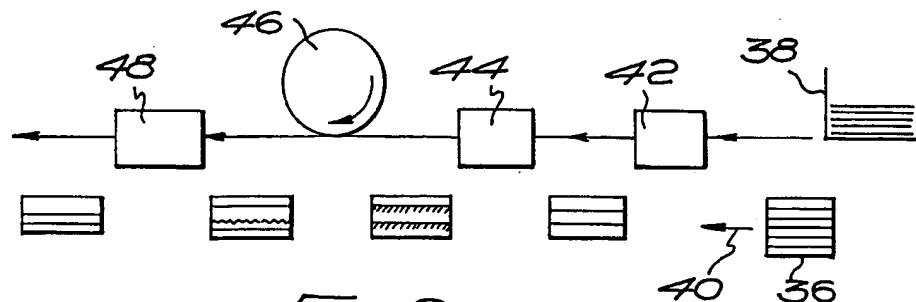


FIG. 6.

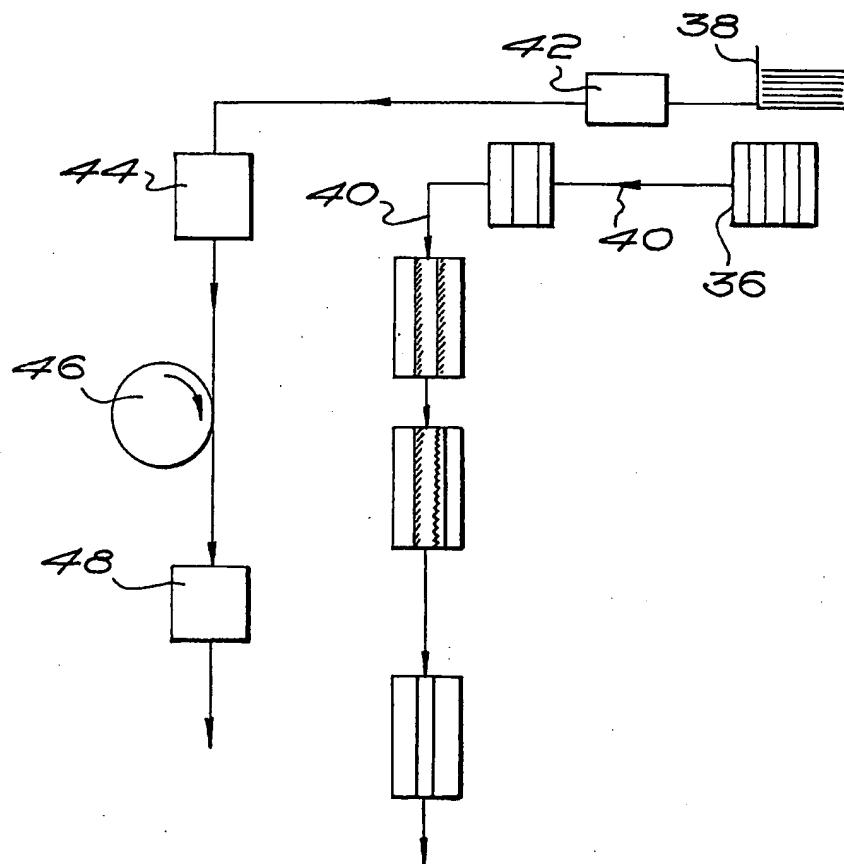


FIG. 7.

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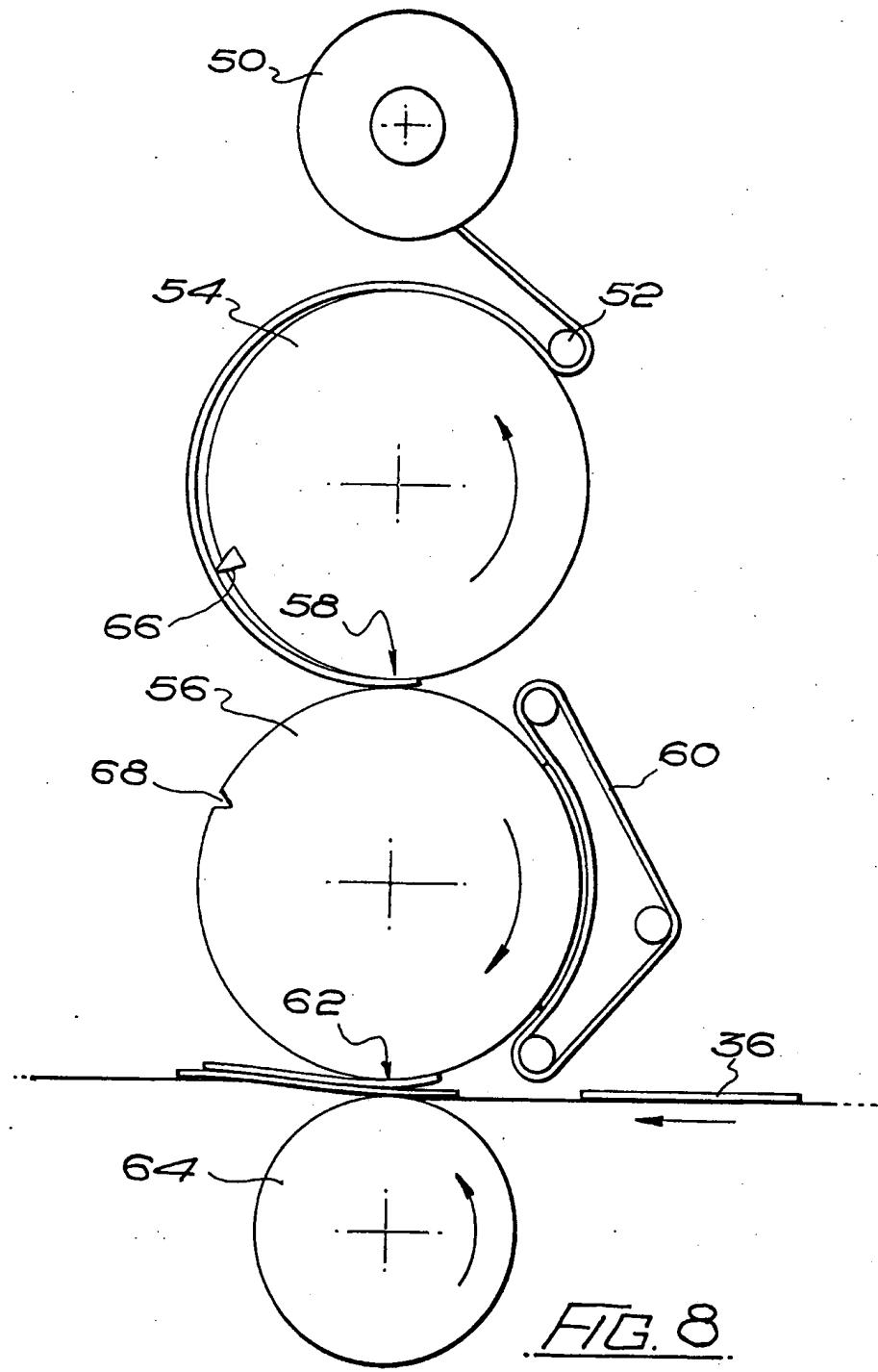


FIG. 8

SPECIFICATION

Carton construction and method of manufacture

5 This invention relates to containers produced from cut and creased sheet material such as cardboard which are for holding rolls of web material, such as aluminium foil or more particularly plastics which is film used in connection with cooking and protection
 10 of foodstuffs. The said plastics film which is used is a thin web of clear plastics material which is used for example for the wrapping of foodstuffs and for the covering of same in order to keep the foodstuffs in a hygienic condition. The invention also applies to a
 15 method of manufacturing the containers.

The invention is concerned with a container for rolls of the said web which are used in households, and typically the web is used by being pulled from the container in lengths, and the lengths are torn
 20 from the remainder by forcing and tearing the web against a serrated cutting edge. Typically, such cutting edge is provided by a metallic strip having teeth along one edge. The container body is essentially of cardboard, and the metallic strip is connected to the cardboard by means of tangs, rivets or the like.

The use of a metallic cutting edge brings several problems insofar as the metallic teeth are a source of danger and readily cause lacerations and cuts when
 30 caught by the fingers. Secondly, the metallic strips are difficult to apply to the cardboard blanks which form the body of the container, making the manufacturing process more expensive than it might otherwise be.

35 The present invention includes in its broadest aspect a container for a roll of material such as aluminium foil or plastic film for domestic use is provided with a serrated edge defined by a rigid plastics material strip applied to a body of cut and creased material by glueing the strip to the said cut and creased material, preferably in a process involving the feeding of the strip and cut and creased material in the direction of the length of the strip.

The cut and creased material, which is preferably
 45 cardboard, preferably defines a body in a fashion similar to the known container, except that a rigid plastics material strip with a serrated edge replaces the metallic strip.

The rigidity of the plastics material and the edge
 50 serrations require to be such as to enable the tearing of individual lengths of the web material, by pulling the web from the container and by tearing it along said serrated edge.

In the method of the invention, the bodies of the
 55 containers are defined by one piece blanks which are fed continuously from a magazine, to an end of process station, and during their movement, the strips are glued thereto including a step which involves passing the strip and blank through the
 60 pressure nip of pressure rollers or the like in a direction which is the length direction of the strip.

65 Preferably, in the said process, a reel of plastics strip material, which is either provided with the serrated edge when in reel form, or is provided with such edge after being unwound from the reel, is

wound around a drive pulley driven by a variable speed drive unit, and then is wound round the first wheel of a pair of cutting wheels, which define a cutting nip, one of said cutting wheels having at least

70 one radially projecting cutting blade, and the other having a groove which receives or an anvil which co-operates with the projected cutting blade, for the chopping of lengths of strip from the reel of same.

The second of said chopping wheels also partly
 75 defines the aforesaid pressure nip, and the strip material is fed from the reel at a controlled speed related to the length of strip required, and the feed of the blanks to the pressure nip, so that strips of any suitable length can be cut from the reel.

80 The feed apparatus preferably also includes a holding band of endless form, and which is applied against the periphery of the second chopping wheel, or the second wheel may be a vacuum wheel, so as to hold the lengths of strip against such wheel and to
 85 ensure that they are fed round the wheel from the chopping nip to the pressure nip.

In the feeding of the blanks from the magazine to the end of the process station, glue will be applied to the blanks prior to the application of the strips, and
 90 the blanks will also be folded into skillet form during their movement.

The folding can take place after the application of the strips, but preferably, the blank will be given an initial fold, then will have the glue applied, then the
 95 strip and then given a further fold to move the blank to a completed skillet form with the strip attached to provide a flattened tubular container which can be erected to receive the roll of web material, and then can have its ends glued.

100 The folding, glueing and application of strip may be done on an in-line basis whereby maximum production speed can be achieved, but in a modified arrangement, the blanks are initially folded transversely of their direction of movement, and then are
 105 moved at right angles to the glueing and strip application stage, followed by a final in-line folding to produce the skillet form.

The invention also provides a machine for carrying out the aforesaid method.

110 The invention provides for the effective construction of containers for film or foil rolls whereby the disadvantages referred to herein are obviated or mitigated.

An embodiment of the invention will now be
 115 described, with reference to the accompanying drawings, wherein:-

Figure 1 is a perspective view of a container according to an embodiment of the invention;

Figure 2 is a perspective view of part of a container
 120 of prior art construction, given by way of comparison;

Figure 3 is a plan view of a blank erectable into the container body of the container shown in *Figure 1*;

Figures 4 and 5 are views of the blank of *Figure 3*

125 during respective construction stages;

Figures 6 and 7 show respectively in flow chart form, the production of the container according to the invention from a blank, in accordance with the respective embodiments of the method; and

130 *Figure 8* illustrates diagrammatically the method

of application of the serrated plastics material strip of the container of Figure 1.

Referring to Figure 1, the container 10 shown therein is elongated and generally of square cross-section having a top 12, a base 14, a front 16, a rear 18, and additionally a cover lid or flap 20 which in the sealed condition of the container is glued to the top 12. Between the rear edge of the top 12 and the rear 18 is a withdrawal slot 22 through which web 10 material 24 may be pulled from a roll of such material contained inside the container. Such web material 24 may be metallic foil or plastics material web.

A rigid plastic strip 26 is adhered to the front 16 of the container so that a serrated edge 28 thereof projects slightly above the top of said front 16, whereby said edge 28 can serve as a severing device for engagement with the web 24, as indicated in chain dotted lines, for the severing of sections of the 20 web 24 from the remainder. Typically, this web material would be used in a domestic kitchen and the user, typically a housewife, would pull a section of web material through the slot 22, then fold the web 24 downwardly onto the serrated edge 28, thereby to sever a length from the remainder of the web.

The conventional construction of a container of this type is illustrated in Figure 2, and it will be seen that the serrated edge 28 is defined by a metallic strip 26 which is secured by tangs deformed from the strip so as to penetrate the cardboard of the container body B. The utilisation of a metallic strip has the disadvantage that the metallic strip serrated edge is much more likely to cause cuts and lacerations of the fingers when contacted thereby, and furthermore, the method of attaching the strip to the board is time consuming.

The blank which is used to construct the container body of the container shown in Figure 1, is illustrated 40 in Figure 3, and it will be seen that the panels forming the top, base, front and rear sides and cover are hinged together along fold lines 1,2,3 and 4. The ends of the top, base and side panels have glue flaps 30 for the closing of the ends of the container, as will 45 be explained hereinafter.

In erecting the blank shown in Figure 3, and assuming the smooth or printed side of the cardboard is face downwards in Figure 3 the blank is first of all folded about line 2, and then the thus folded 50 blank is passed through a glueing station whereat at least the line of adhesive 34 is or lines of adhesive 32,34 are applied to the blank, as shown by cross hatching lines in Figure 4. The plastics material strip 26 is applied to the line of glue 34 on the front 16 by 55 moving the blank and strip together through the nip of a pair of rollers in a direction of the length of the strip 26, also as will be explained herein. The container as erected to this stage is illustrated in Figure 5. To complete the erection of the container to 60 skillet form, the cover panel 20 is folded over onto the top 12 (after application of glue on line 32 if appropriate), so as to become attached thereto along the glue line 32, which leaves the free edge of the cover panel 20 unattached and graspable by the 65 fingers for the opening of the container as will be

explained.

When the container is to be loaded with its contents, it is erected from the flattened skillet form and the roll of web material is placed therein, and the 70 end flaps 30 are glued together to complete the container. To gain access to the container, the free edge of the cover panel 20 is grasped and pulled back to break the adhesive connection between the top panel and cover panel, in order to expose the 75 rear slot 22, from which the the web 24 is pulled, as indicated in Figure 1.

The method of the invention provides for the rapid production of containers on a sequential and continuous basis, and two methods are illustrated by the 80 flow diagrams 6 and 7.

In Figure 6, it is shown that the container blanks 36 when in the condition shown in Figure 3 are contained in a magazine 38, and these are fed one by one from the magazine 38 as indicated by arrow 40. 85 The blanks 36 are fed in the direction of the crease lines 1-4, and the blanks first of all meet a folding device 42 in the form of a plough or other arrangement which folds each blank to the condition shown in Figure 4. The blanks then pass a glueing station 44 whereat the glue is applied in a pattern as indicated in Figure 4 or only glue on line 34 is applied at this time, and this station 44 is followed by a strip application station 46, whereat the strips 26 of plastics material are applied, and then, if not previously applied, the glue is applied on line 32 and finally, the blanks pass a further folding station 48 whereat the blanks are folded to the skillet form ready for despatch to the customer who will erect and load the containers with their contents. The 100 arrangement of Figure 6 is an in-line operation, in that the blank travels at all times in the direction of the creases so that all folding can be performed by plough devices, and pressure can be applied by means of nip rollers. Any suitable transporting system may be used for moving the blanks through the various stages. In a modified arrangement of the Figure 6 layout in which station 44 applies only glue line 34, the blanks emerging from station 46 are collected and are subsequently fed through an in line 105 folding and glueing machine to complete the erection.

The difference between the Figure 7 and Figure 6 arrangement is that in Figure 7 the blanks initially travel in a direction at right angles to their creases, 115 and the first folding operation involves folding the blanks about creases 2 by suitable folding devices. Subsequently, the blanks move in a direction at right angles to the previous direction, through the glueing strip application and final folding stages, which are 120 identical to the corresponding stages in the Figure 6 arrangement, as will be appreciated as the same reference numerals have been used.

Figure 8 shows one form of strip applicator apparatus, and this comprises a support roll 50 for a 125 reel of strip material, and a drive pulley 52 which is coupled to be driven by a variable speed drive unit. The strip from the support roller 50 passes over the drive roller 52 as shown, and then passes over a severing roller 54 which co-operates with a second severing roller 56 to provide a chopping nip 58

whereat the strip material is cut into lengths of the appropriate dimension to be applied to the blanks 36 which are travelling to the application station 46. The chopped lengths of plastics strip are held to the 5 second chopping roller 56 by means of an endless belt arrangement 60, and are delivered by such endless belts to a pressure nip 62 defined by the second chopping roller and a reaction roller 64 (or other surface). As an alternative to the belt 60, the 10 drum 56 may be a vacuum drum. The movement of the blanks and the delivery of the lengths of plastic strip material are synchronised to ensure that the strips are accurately placed in the correct position on the moving blanks.

15 In order to effect the aforesaid chopping action, the first chopping roller 54 is provided with a projecting knife edge 66, which engages in an appropriate slot 68 in the second chopping roller 56 which slot and edge meet at the chopping nip 58 20 during each revolution of the rollers. As an alternative to slot 68, the drum 56 may have an anvil against which the blade acts. The feeding of the strip material however, is controlled by the variable speed drive, and in fact the strip material will slip relatively 25 to the first chopping roller 54 until chopping takes place. It will be noted however, that after a length of strip material has been chopped from the remainder, it is at all times held at some point in its length, so that there is no loss of control in the delivery and 30 application of the strip to the blank. The application of the strip to the blank is achieved by the application of pressure, by virtue of the nip 62. The blank and strip move together in the direction of the length of the strip and emerge from the nip as a combined unit 35 which is subjected finally to the final folding to move it to skillet form.

In order to save wastage, the plastics strips may be produced by marking a serrated cut along the centre of a plastic band to provide two similar half bands 40 serrated along one edge. The half bands are fed in parallel to the chopping roller 54 and two rows of blanks 36 are fed in parallel to the nip 62 so that the completed containers emerge two by two from the nip 62.

45

CLAIMS

1. A container for a roll of material such as aluminium foil or plastic film for domestic use is 50 provided with a serrated edge defined by a rigid plastics material strip applied to a body of cut and creased material by glueing the strip to the said cut and creased material, preferably in a process involving the feeding of the strip and cut and creased 55 material in the direction of the length of the strip.

2. A method of producing containers as claimed in Claim 1, wherein the bodies of the containers are defined by one piece blanks which are fed continuously from a magazine, to an end of process 60 station, and during their movement, the strips are glued thereto including a step which involves passing the strip and blank through the pressure nip of pressure rollers or the like in a direction which is the length direction of the strip.

65 3. A method according to Claim 2, wherein a reel

of plastics strip material, which is either provided with the serrated edge when in reel form, or is provided with such edge after being unwound from the reel, is wound around a drive pulley driven by a

70 variable speed drive unit, and then is wound round the first wheel of a pair of cutting wheels, which define a cutting nip, one of said cutting wheels having at least one radially projecting cutting blade, and the other having a groove which receives the 75 projected cutting blade, for the chopping of lengths of strip from the reel of same.

4. A method according to Claim 5, wherein the second of said chopping wheels also partly defines the aforesaid pressure nip, and the strip material is 80 fed from the reel at a controlled speed related to the length of strip required, and the feed of the blanks to the pressure nip, so that strips of any suitable length can be cut from the reel.

5. A method according to Claim 4, wherein the 85 feed apparatus includes a holding band of endless form, and which is applied against the periphery of the second chopping wheel, so as to hold the lengths of strip against such wheel and to ensure that they are fed round the wheel from the chopping nip to the 90 pressure nip.

6. A method according to any of Claims 2 to 5, wherein, in the feeding of the blanks from the magazine to the end of process station, glue is applied to the blanks prior to the application of the 95 strips, and the blanks will also be folded into skillet form during their movement.

7. A method according to any of the claims 2 to 6, wherein the blanks are given an initial fold, then have the glue applied, then the strips are applied, 100 and then are finally folded to move the blanks to complete skillet form with the strips applied to provide flattened containers which can be erected to receive the roll of web material, and then have their ends glued.

105 8. A method according to claim 7, wherein the blanks are initially folded transversely of their direction of movement, and then are moved at right angles to the glueing and strip application stage, followed by a final in-line folding to produce the 110 skillet form.

9. A container for a roll of material substantially as hereinbefore described with reference to Figure 1 of the accompanying drawings.

10. A method of manufacturing containers, substantially as hereinbefore described with reference to any of the embodiments illustrated in Figures 3 to 115 8 of the accompanying drawings.